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Green marketing education and strategy to increase circular economy adoption in Sidomukti Village community, Lamongan Regency

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ABSTRACT

The Community Partnership Program (PKM) implemented in Sidomukti Village, Lamongan Regency, focuses on education and green marketing strategies to increase the adoption of a circular economy. The program objectives are: Empowering communities through processing coconut water waste into nata de coco. The activity is carried out by providing training on product marketing strategies, which are expected to improve the economic welfare of the community and reduce waste by encouraging local entrepreneurship. Despite challenges such as limited knowledge and facilities, ongoing training and support are expected to help communities overcome obstacles and achieve success. The benefits of the program include: Improving production infrastructure and utilizing digital marketing. The method used is to build sustainable partnerships and conduct periodic evaluations. This method is expected to provide long-term benefits for the people of Sidomukti Village. The program activities include socialization, training, technology application, mentoring, and evaluation. The community learns the production and marketing process of nata de coco, which has high economic value. As a result, the community gains new skills, increases income, and awareness of sustainable waste management. This program encourages collaboration with academics, government, and the private sector for better business development. It is that this program will succeed in improving community and environmental welfare. It is recommended to continue training and product innovation, was designed in the form of the enrichment program for weekend class was effectively run.

Kata Kunci
Ekonomi sirkular
Pendidikan
Pemasaran hijau

Pendidikan dan Strategi Pemasaran Hijau untuk Meningkatkan Adopsi Ekonomi Sirkular oleh Masyarakat Desa Sidomukti, Kabupaten Lamongan. *Program Kemitraan Masyarakat (PKM) yang dilaksanakan di Desa Sidomukti, Kabupaten Lamongan, berfokus pada edukasi dan strategi pemasaran hijau untuk meningkatkan adopsi ekonomi sirkular. Sasaran program adalah memberdayakan masyarakat melalui pengolahan limbah air kelapa menjadi nata de coco. Kegiatan dilakukan dengan memberikan pelatihan strategi pemasaran produk, yang diharapkan dapat meningkatkan kesejahteraan ekonomi masyarakat dan mengurangi sampah dengan mendorong kewirausahaan lokal. Meskipun menghadapi tantangan seperti keterbatasan pengetahuan dan fasilitas, pelatihan dan dukungan yang berkelanjutan diharapkan dapat membantu masyarakat mengatasi kendala dan mencapai keberhasilan. Manfaat program antara lain memperbaiki infrastruktur produksi dan memanfaatkan pemasaran digital. Metode yang digunakan adalah membangun kemitraan berkelanjutan dan melakukan evaluasi berkala. Metode ini diharapkan dapat memberikan manfaat jangka panjang bagi masyarakat Desa Sidomukti. Kegiatan program meliputi sosialisasi, pelatihan, penerapan teknologi, pendampingan, dan evaluasi. Masyarakat mempelajari proses produksi dan pemasaran nata de coco, yang memiliki nilai ekonomi tinggi. Hasilnya, masyarakat memperoleh keterampilan baru, meningkatkan pendapatan, dan kesadaran akan pengelolaan sampah berkelanjutan. Program ini mendorong kolaborasi dengan akademisi, pemerintah, dan sektor swasta untuk pengembangan bisnis yang lebih baik. Diharapkan program ini akan berhasil meningkatkan kesejahteraan masyarakat dan lingkungan. Disarankan untuk terus melanjutkan pelatihan dan inovasi produk, yang dirancang dalam bentuk program pengayaan untuk kelas akhir pekan agar berjalan efektif.*

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INTRODUCTION

Circular economy is an economic model that focuses on the sustainable and efficient use of resources by minimizing waste and pollution while the concept of green marketing is a marketing strategy that promotes environmentally friendly and sustainable products and services. These two concepts are closely related. Green marketing can help drive the circular economy by, increasing consumer awareness of the benefits of the circular economy and the products/services that support it. Encouraging consumers to choose environmentally friendly and sustainable products/services. Supporting businesses that implement the circular economy model (Li et al., 2020; Sulich & Sołoducho-Pelc, 2022). In Lamongan itself, the potential for abundant natural resources that can be utilized by the community, one of which is coconut water waste for making Nata de coco is a food product made from coconut water and Acetobacter xylinum bacteria. This product has many health benefits and can be processed into various types of food and drinks. Coconut plants are a very potential commodity, all parts of the coconut plant are useful for human life needs. Coconut fruit consists of coconut fiber, shell, flesh, and coconut water. All parts of the coconut fruit are not wasted and can be used to produce industrial products. Coconut fiber can be used as fiber, doormats, brooms, car seats, and mattresses. The flesh of the fruit can be used as raw material to produce copra, coconut oil, coconut cream, coconut milk, and desiccated coconut, while coconut water can be used to make vinegar and nata de coco. The shell can be used to make charcoal, activated carbon, liquid smoke, and handicrafts. Building materials for building frames and handicrafts can be produced from coconut trunks (Alonso-Almeida et al., 2020; Agyabeng-Mensah et al., 2021; Arsawan et al., 2024; Bag et al., 2022; Kevin van Langen et al., 2021) Coconut water (cocos nucifera) is often wasted and causes problems due to its strong aroma after being thrown into the environment for some time. The amount of coconut water every day is much greater than the amount used. Coconut water waste processing can be done simply by making nata de coco, because making this product can help overcome the emergence of coconut water waste pollution (de Souza et al., 2022; Chen et al., 2020; Centobelli et al., 2021; Cantú et al., 2021). Coconut water is the main raw material for making Nata de Coco, while the coconut water used comes from ripe green coconuts.

Coconut water waste processing can be done simply by making nata de coco, because making this product can help overcome the emergence of coconut water waste pollution (Shi, et al, 2022; D'Amato & Korhonen, 2021) Coconut water is the main raw material for making Nata de Coco, on the other hand the coconut water used comes from ripe green coconuts. The coconut water used must be pure, not mixed with water or dirt, but it does not always have to be fresh (new coconut water). Coconut water contains various nutrients that can be utilized by bacteria that produce Nata de Coco. The nutrients contained in coconut water include: 1.28% sucrose sugar, various mineral sources including Magnesium and the presence of growth promoting factors, which are compounds that can increase the growth of nata-producing bacteria (Acetobacter xylinum). The presence of sucrose sugar in coconut water will be utilized by Acetobacter xylinum as a source of energy, as well as a source of carbon to form metabolite compounds including cellulose which forms Nata de Coco (Dwivedi & Paul, 2022; García-Salirrosas & Rondon-Eusebio, 2022; Hamam et al., 2021).

But in the context of a circular economy, there are several problems in marketing nata de cocos, namely consumers are still less aware of the benefits of nata de coco in the context of a circular economy, consumers do not fully understand how nata de coco can help reduce waste and pollution, lack of clear branding and labeling on environmentally friendly nata de coco products, consumers have difficulty in distinguishing nata de coco products that are produced using sustainable methods (Gustavo et al., 2021; Kar & Harichandan, 2022; Kaur et al., 2022; Kazancoglu et al., 2021). Nata de coco has great potential to become an environmentally friendly and sustainable product. However, to achieve this potential, efforts need to be made to increase consumer awareness, branding, and labeling, pricing, distribution, and collaboration. Coconut water waste management can contribute significantly to the Sustainable Development Goals (SDGs). For example, by processing coconut water waste into value-added products such as organic fertilizer or biogas, we can achieve SDG (Clean Water and Sanitation) by reducing water pollution. In addition, this initiative can support SDG (Responsible Consumption and Production) by reducing waste and promoting efficient use of resources. Thus, coconut water waste management not only helps protect the environment but also promotes sustainable development as a whole (Kustyawati et al., 2023; Kumar et al., 2023; Khan et al., 2022)

METHOD

The implementation method in this activity is the socialization method, question and answer, and discussion. The activity begins with counseling on coconut water waste, after which participants are explained about the utilization of

coconut water waste into processed food products. The second is training with the practice of making processed food products from coconut water waste into nata de coco. Throughout the implementation of the activity, the community is given the opportunity to ask questions related to waste processing. Participants discuss the process carried out during the activity. The training is carried out by means of direct practice with the village community as well as the application of technology that has been prepared by the team for utilization. As for mentoring and evaluation, it is carried out during the community service activity. This is done to monitor the program that has been implemented. Empowerment of mothers in Sidomukti Village, Lamongan Regency in order to improve food processing skills and reduce coconut water waste is carried out with a nata de coco making workshop. Coconut water is obtained from coconut sellers in traditional markets which are usually not utilized (Kristiandi et al., 2022; Manurung et al., 2024; Mardin & Lasalewo, 2021). The sustainability of the program expected in this program continues and the community can utilize coconut water waste which is in line with the concept of this empowerment, namely increasing income in general, namely the utilization of waste into blessings or a circular economy (Marrucci et al., 2021; Milios, 2021; Moreno-Mondéjar et al., 2021). In detail, the five steps of community service are explained as follows:

1. Socialization, the initial step of community service begins with socialization activities, by disseminating information and knowledge about waste management. implementation of socialization, discussion and Q&A. The introduction begins with counseling about waste, then an explanation of waste management and how to utilize it.
2. Training, the next step is to provide training to the community, especially the Sidomukti village community with experienced speakers in their fields. training with the practice of making processed food products from coconut water waste into useful products. During the activity, community activities in Sidomukti village conducted questions and answers related to waste processing. The process carried out during the activity was carried out through discussion and others.
3. Application of technology, after conducting training, the application of technology in the form of tools or materials made by the research team that had been designed and utilized by practicing directly with the Sidomukti village community.
4. Mentoring and evaluation, activities were carried out during community service activities and activities were also carried out to monitor programs that had been implemented. Efforts to improve skills in waste utilization were carried out through mentoring and workshops to improve waste utilization.
5. The sustainability of this program is expected to provide broader and ongoing benefits and the community can process waste that is relevant to the waste management solution in the empowerment program, which is useful for improving the welfare of the Sidomukti village community and its benefits are even broader.

Figure 1: Flowchart Activity

RESULTS AND DISCUSSION

Pre-implementation

Analysis

Coconut water waste processing can be done through women's empowerment, especially in areas with a high number of unemployed women. Empowerment can be one of the development approaches in the process of strengthening the economy and society to improve the welfare of the community, especially in rural areas (Nayal et al., 2022; Ncube et al., 2023; Prieto-Sandoval et al., 2022; Sharma et al., 2021). Women's empowerment in Sidomukti Village is one way to improve skills in waste processing that has not been touched so far. The problem of coconut water waste which is quite high and the lack of skills in processing this waste make women's empowerment in nata de coco processing important. Nata de Coco is a solid material like agar-agar but more chewy or like palm fruit, not soft, transparent white. A type of refreshing food or dessert and can be mixed into ice cream, fruit cocktails, yogurt and so on Nata is the result of Acetobacter xynilum fermentation with a substrate containing sugar, if the substrate used is coconut water, it is generally known as nata de coco. This product is widely known by the public and has a fairly high economic value. Empowering women, especially mothers and even youth groups in Sidomukti Village in processing coconut water waste into nata de

coco can be one way to increase women's independence (Suchek et al., 2021; Sulich & Sołoducho-Pelc, 2022; Tang et al., 2022). This program aims to increase knowledge of reducing coconut water waste and how to make nata de coco and improve the economy of the Sidomukti Village community.

Geographical Conditions and Natural Resources Sidomukti Village has a large amount of coconut water waste available in this village. The strategic location of the village with relatively easy access also supports the production and distribution of nata de coco products. Community Skills and Knowledge Most of the village community has basic skills in processing coconut-based products, but knowledge of fermentation technology and nata de coco production is still limited. The training provided plays an important role in overcoming this limitation by providing practical knowledge that can be applied directly. Infrastructure and Facilities Sidomukti Village has adequate basic infrastructure, but special facilities for nata de coco production still need to be improved. Provision of tools and materials for fermentation and hygienic production space are challenges that need to be overcome. Social and Economic Aspects The majority of the village population works in the agricultural sector with relatively low incomes. The program for processing coconut water waste into nata de coco has the potential to increase community income by opening up new business opportunities and diversifying the village economy (Yu et al., 2022).

Implementation

Socialization and training of coconut water waste processing into nata de coco. This activity not only focuses on the production process, but also on how to market nata de coco products in order to improve the welfare of local communities.

The event was attended by more than 25 PKK mothers and residents of Sidomukti Village, Lamongan Regency, who enthusiastically participated in each training session. The speakers presented were experts from the Ahmad Dahlan Institute of Technology and Business, Lamongan, who explained the steps and techniques for making nata de coco, from fermentation to marketing the final product.

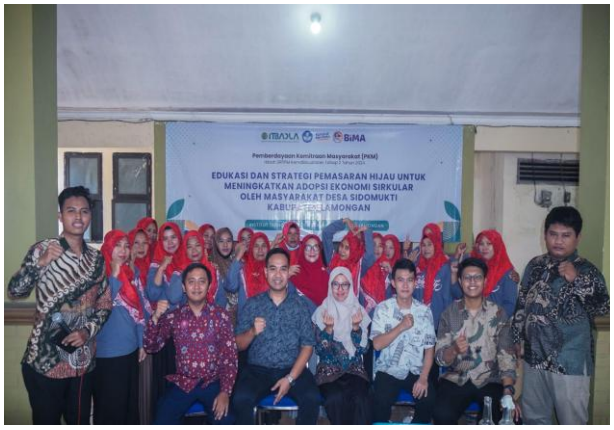

Figure 2: Enthusiasm of Training Participants

Nata de Coco Making Process

Participants are taught starting from collecting coconut water waste, fermentation process using Acetobacter xylinum bacteria, to proper packaging techniques to ensure product quality. This fermentation process takes about 7-10 days, where coconut water will turn into nata de coco gel that is ready to be consumed.

Figure 3: Waste Management Training

Green or environmentally friendly marketing strategies

In the next session, participants received training on how to market nata de coco products. Some of the main points discussed include: Digital Marketing with the use of social media such as Instagram and Facebook to promote products widely. Cooperation with Retailers, namely establishing cooperation with local shops and supermarkets to expand market reach. Online Sales by Opening online stores on e-commerce platforms such as Tokopedia and Shopee to reach wider consumers.

Figure 4: Product Marketing Training

The participants seemed enthusiastic and hoped to immediately apply the knowledge they had gained. The event also included a Q&A session and discussion, where participants could share their experiences and the obstacles they faced in the process of making and marketing nata de coco. With this initiative, Sidomukti Village, Lamongan Regency, has the potential to become a famous nata de coco production center in East Java, bringing new hope to the local economy.

Business Development

During the implementation of community service, the enthusiasm of the participants was very much felt. Many participants looked very enthusiastic to learn and apply new techniques in processing coconut water waste into nata de coco. When using equipment such as fermentation techniques, they quickly mastered how it worked and even began to exchange tips to improve production results.

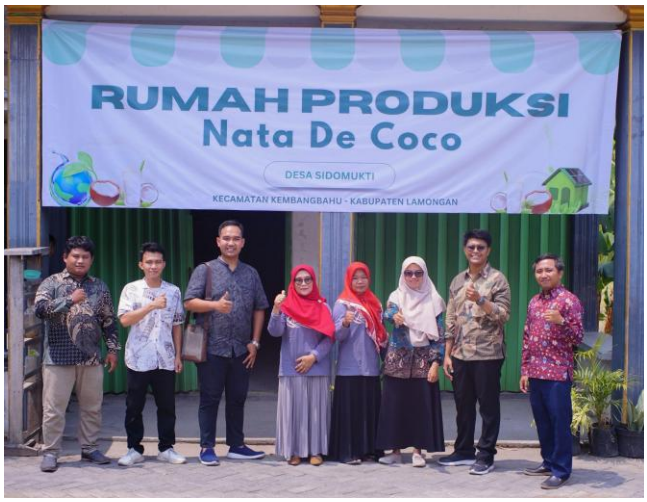

Figure 5. Production House Development

The most interesting moment was when they saw the first fermentation process and the nata de coco that was produced. The pride and satisfaction were clearly visible on their faces. In the practical session, the interaction between participants was very positive, with many discussions and collaborations taking place. Many participants stated that they felt more confident and motivated to develop this business seriously. This success not only brings economic benefits, but also strengthens the community spirit and collaboration in Sidomukti Village.

CONCLUSION

The socialization and training program for processing coconut water waste into nata de coco in Sidomukti Village has shown very positive results. The community gained practical skills in the fermentation and production process, and understood the importance of sustainable waste management. Support from academics, government, and the private sector strengthened this program, both in terms of technology, marketing, and infrastructure. In addition, the nata de coco products produced have high economic value, which contributes to increasing the income and welfare of the village community.

Continuity of Training and conducting advanced training to deepen community skills, including in terms of product innovation and more sophisticated marketing techniques. Infrastructure Development seeks to improve hygienic and adequate production facilities to support larger production scales. Digital Marketing by encouraging the use of digital platforms and e-commerce to expand the reach of the nata de coco market. Sustainable Partnerships to strengthen cooperation with academics, government, and the private sector to ensure ongoing support in various aspects of production and marketing. Periodic Evaluation by conducting periodic evaluations of the program to identify successes and obstacles, and making necessary adjustments so that the program remains effective and sustainable. It is hoped that the coconut water waste processing program into nata de coco can continue to develop and provide long-term benefits for the people of Sidomukti Village, and as widely as possible

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Thank you to all parties who have contributed and supported the success of this program. Community service entitled Education and Green Marketing Strategy for Increasing Circular Economy Adoption in Sidomukti Village, Lamongan Regency. Community service program and training on processing coconut water waste into nata de coco and its marketing strategy implemented in Sidomukti Village, Kembangbahu District. This program is a real manifestation of our commitment to empowering communities and supporting environmental sustainability.

Through this training, we strive to provide practical skills and in-depth knowledge to villagers so that they can process abundant coconut water waste into high-value products. In addition, this training also includes effective marketing strategies, so that the nata de coco products produced can reach a wider market and provide significant economic benefits to the community.

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